

## **IN THE CLAIMS**

1. (Currently amended) A computerized method of creating a Web Service composition to enable a user to achieve a goal comprising:

receiving, by a server, a user request from a user, wherein the user request includes the goal of the user;

identifying a plurality of Web Services to be performed according to service the user request, wherein the plurality of Web Services are services provided by at least one of: one or more of a plurality of devices or one or more of a plurality of web servers; and

generating, from the plurality of Web Services, a service plan to be performed by the identified plurality of Web Services, wherein the service plan represents a plurality of actions that invokes the plurality of Web Services;

translating the plan into a Web Service composition expressed in a business process modeling language incorporating exception handling; and

transmitting the Web Service composition to a user system, wherein the user system executes the Web Service composition to invoke at least one of the plurality of Web Services to perform a transaction to generate transaction information for the user request.

2. (Original) The method of claim 1 further comprising:

executing the expressed Web Service composition in a business process modeling language execution engine.

3. (Original) The method of claim 1 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).
4. (Canceled)
5. (Canceled)
6. (Original) The method of claim 1 further comprising:  
determining constraints and preferences associated with the user request.
7. (Original) The method of claim 1 wherein the expressed composite Web Service is generated using automated planning.
8. (Currently amended) The method of claim 1 wherein ~~generating~~ translating the plan into the composite Web Service expressed in the business process modeling language comprises:  
developing a planning domain associated with the business process modeling language; and  
creating a plan based on a specification of the planning domain; ~~and~~

~~translating the plan into the Web Service composition expressed in the business process modeling language.~~

9. (Currently amended) The method of claim 1 wherein ~~generating~~ translating the plan into the composite Web Service expressed in the business process modeling language comprises:

developing an abstract service domain (ASD);

generating a first plan based on a specification of the ASD;

translating the first plan into a second plan created based on a specification of a second domain associated with the business process modeling language; and

translating the second plan into the Web Service composition expressed in the business process modeling language.

10. (Original) The method of claim 9 wherein the ASD is developed based on input of a domain expert.

11. (Original) The method of claim 9 wherein the first plan is generated using a hierarchical task network (HTN) planner.

12. (Currently amended) The method of claim 1 wherein ~~generating~~ translating the plan into the composite Web Service expressed in the business process modeling language comprises:

developing an abstract service domain (ASD);  
converting the ASD to a second domain associated with the business process modeling language; and  
obtaining a plan based on a specification of the second domain; ~~and~~  
~~translating the plan into the Web Service composition expressed in the business process modeling language.~~

13. (Currently amended) An apparatus comprising:

a request receiver to receive a user request from a user, wherein the user request includes a goal for the user;

a plan generator to identify a plurality of Web Services to be performed ~~according~~ to service the user request and to generate a service plan to be performed by the identified plurality of Web Services, wherein the service plan represents a plurality of actions that invokes the plurality of Web Services, wherein the plurality of Web Services are services provided by at least one of: one or more of a plurality of devices or one or more of a plurality of web servers; and

a translator to translate the plan into ~~generate, from the plurality of Web Services,~~ a Web Service composition expressed in a business process modeling language incorporating exception handling, and to transmit the Web Service composition to a user system, wherein the user system executes the Web Service composition to invoke at least one of the plurality of Web Services to perform a transaction to generate transaction information for the user request.

14. (Canceled)

15. (Original) The apparatus of claim 13 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

16. (Canceled)

17. (Canceled)

18. (Original) The apparatus of claim 13 wherein the request receiver is to determine constraints and preferences associated with the user request.

19. (Original) The apparatus of claim 13 wherein the expressed composite Web Service is generated using automated planning.

20. (Currently amended) The apparatus of claim 13 wherein the translator is to ~~generate~~ translate the plan into the composite Web Service expressed in the business process modeling language by developing a planning domain associated with the business process modeling language[[,]] and creating a plan based on a specification of the

planning domain, ~~and translating the plan into the Web Service composition expressed in the business process modeling language.~~

21. (Currently amended) The apparatus of claim 13 wherein the translator is to ~~generate~~ translate the plan into the composite Web Service expressed in the business process modeling language by developing an abstract service domain (ASD), generating a first plan based on a specification of the ASD, translating the first plan into a second plan created based on a specification of a second domain associated with the business process modeling language, and translating the second plan into the Web Service composition expressed in the business process modeling language.

22. (Original) The apparatus of claim 21 wherein the ASD is developed based on input of a domain expert.

23. (Original) The apparatus of claim 21 wherein the first plan is generated using a hierarchical task network (HTN) planner.

24. (Currently amended) The apparatus of claim 13 wherein the translator is to ~~generate~~ translate the plan into the composite Web Service expressed in the business process modeling language by developing an abstract service domain (ASD), converting the ASD to a second domain associated with the business process modeling language, and

obtaining a plan based on a specification of the second domain, ~~and translating the plan into the Web Service composition expressed in the business process modeling language.~~

25. (Currently amended) An apparatus comprising:

means for receiving a user request from a user, wherein the user request includes the goal of the user;

means for identifying a plurality of Web Services to be performed ~~according to service~~ the user request, wherein the plurality of Web Services are services provided by at least one of: one or more of a plurality of devices or one or more of a plurality of web servers; and

means for generating, from the plurality of Web Services, a service plan to be performed by the identified plurality of Web Services, wherein the service plan represents a plurality of actions that invokes the plurality of Web Services;

means for translating the plan into a Web Service composition expressed in a business process modeling language incorporating exception handling; and

means for transmitting the Web Service composition to a user system, wherein the user system executes the Web Service composition to invoke at least one of the plurality of Web Services to perform a transaction to generate transaction information for the user request.

26. (Original) The apparatus of claim 25 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution

Language for Web Services (BPEL4WS) and a Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

27. (Canceled)

28. (Canceled)

29. (Currently amended) A machine readable medium having stored thereon data representing sequences of instructions, which when executed by a computer system, cause said computer system to perform a method comprising:

receiving a user request from a user, wherein the user request includes the goal of the user;

identifying a plurality of Web Services to be performed according to service the user request, wherein the plurality of Web Services are services provided by at least one of: one or more of a plurality of devices or one or more of a plurality of web servers; and

generating, from the plurality of Web Services, a service plan to be performed by the identified plurality of Web Services, wherein the service plan represents a plurality of actions that invokes the plurality of Web Services;

translating the plan into a Web Service composition expressed in a business process modeling language incorporating exception handling; and

transmitting the Web Service composition to a user system, wherein the user system executes the Web Service composition to invoke at least one of the plurality of



Web Services to perform a transaction to generate transaction information for the user request.

30. (Original) The machine readable medium of claim 29 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

31. (Canceled)

32. (Canceled)

33. (Currently amended) A system comprising:  
a memory; and  
at least one processor coupled to the memory, the at least one processor executing a set of instructions which cause the at least one processor to  
receive a user request from a user, wherein the user request includes the goal of the user,  
identify a plurality of Web Services to be performed ~~according to~~ service the user request, wherein the plurality of Web Services are services provided by at least one of: one or more of a plurality of devices or one or more of a plurality of web servers; and

generate, from the plurality of Web Services, a service plan to be performed by the identified plurality of Web Services, wherein the service plan represents a plurality of actions that invokes the plurality of Web Services;

translate the plan into a Web Service composition expressed in a business process modeling language incorporating exception handling; and

transmit the Web Service composition to a user system, wherein the user system executes the Web Service composition to invoke at least one of the plurality of Web Services to perform a transaction to generate transaction information for the user request.

34. (Original) The system of claim 33 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS) and Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

35. (Canceled)

36. (Canceled)